

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

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To:

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NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

Date of mailing (day/month/year)	24.03.2005
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Applicant's or agent's file reference WO 21.1106	<i>D&N</i>
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IMPORTANT NOTIFICATION

International application No. PCT/EP 03/12069	International filing date (day/month/year) 30.10.2003	Priority date (day/month/year) 31.12.2002
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Applicant SERVICES PETROLIERS SCHLUMBERGER ET AL	<i>NT</i>
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1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:	Authorized Officer
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PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference WO 21.1106	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/12069	International filing date (<i>day/month/year</i>) 30.10.2003	Priority date (<i>day/month/year</i>) 31.12.2002
International Patent Classification (IPC) or both national classification and IPC F16D57/02		
Applicant SERVICES PETROLIERS SCHLUMBERGER ET AL		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of 5 sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of 3 sheets.
3.	This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the opinion II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 29.07.2004	Date of completion of this report 24.03.2005
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840 </div> </div>	Authorized Officer Topolski, J Telephone No. +49 30 25901-525



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/12069**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-11 as originally filed

Claims, Numbers

1-22 received on 11.02.2005 with letter of 09.02.2005

Drawings, Sheets

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/12069**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	5,7,8,12
	No: Claims	1-4,6,9-11,13-22
Inventive step (IS)	Yes: Claims	
	No: Claims	1-22
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

1. The following documents (D) are referred to in this communication;
the numbering will be adhered to in the rest of the procedure:

D1: PATENT ABSTRACTS OF JAPAN vol. 2002, no. 06, 4 June 2002 (2002-06-04)
-& JP 2002 048164 A (TCM CORP), 15 February 2002 (2002-02-15)

D2: US-A-3 599 906 (REINEMUTH GEORGE HORST) 17 August 1971 (1971-08-17)

D3: US-A-5 924 534 (OKUBO MASAHIRO) 20 July 1999 (1999-07-20)

D4: FR-A-1 009 991 (PICAND ROLAND-ANDRE; TENOT ANDRE-LOUIS) 5 June 1952 (1952-06-05)

D5: US-A-3 728 040 (IOANNESIAN R ET AL) 17 April 1973 (1973-04-17)

2. The present application does not satisfy the criterion set forth in Article 33(2) PCT because the subject-matter of claim 1 is not new in respect of the prior art as defined in the regulations (Rule 64(1)-(3) PCT).

- 2.1 With respect to independent claim 1:

Document D1 discloses (the reference signs in parenthesis applying to this document):

*A hydraulic braking device suitable for a turbine (1) in a drilling equipment**, the said turbine (1) being provided with a turbine shaft(6,7), **wherein** it comprises at least one body (21) connected to the said turbine shaft (6, 7), and that when the said hydraulic braking device is immersed in a fluid medium, rotation of the turbine shaft (6,7) about its axis causes a movement of the said at least one body (21) with respect to the said fluid medium, this movement generating a *resisting torque that is a function of the square of the rotation speed of the turbine shaft (6,7) with respect to the said fluid medium*** (see especially figs. 1, 2 and abstract).

* Claim 1 refers to a hydraulic braking device that is only suitable for a turbine in a drilling equipment. Any of the hydraulic braking devices depicted in documents D1-D5 are suitable for a turbine in a drilling equipment.

** It is implicitly known from D1 (or commonly known in the field, see e.g. D2, column 2, lines 71-73) that the resisting torque, in a hydraulic braking device of the specified type, has a function of the square of the rotation speed of the turbine shaft with respect to the fluid medium.

Thus all the features of claim 1 are known from D1.

2.1.1 The subject matter of claim 1 is also not novel over D5.

3. Dependent claims 2-22:

The dependent claims 2-23 do not appear to contain any additional features which, in combination with features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and/or inventive step (Articles 33(2) und 33(3) PCT), as all the features introduced with these claims seem to be either known from each of D1 or D5, or known from a combination with D2-D4, or known while used with a known corresponding effect and/or seem to introduce slight constructional changes without inventive meaning and which come within the scope of the customary practice followed by persons skilled in the art.

EPO - DG 1

10/540236

CLAIMS

JC17 Rec'd PCT/PTO

11.02.2005

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(93)

1. Hydraulic braking device (10) for a turbine (2) in a drilling equipment, the said turbine (2) being provided with a turbine shaft (4),

characterized in that it comprises at least one body (12) connected to the said turbine shaft (4),

and in that when the said hydraulic braking device (10) is immersed in a fluid medium, rotation of the turbine shaft (4) about its axis (6) causes a movement of the said at least one body (12) with respect to the said fluid medium, this movement generating a resisting torque (T) that is a function of the square of the rotation speed (ω_1) of the turbine shaft (4) with respect to the said fluid medium.

2. Device (10) according to claim 1, characterized in that it comprises a braking shaft (14) coupled to the said turbine shaft (4), and in that the said at least one body (12) is connected to the said braking shaft (14).

3. Device (10) according to claim 2, characterized in that the said coupling between the braking shaft (14) and the turbine shaft (4) is such that an axial rotation of the turbine shaft (4) causes axial rotation of the braking shaft (14).

4. Device (10) according to either of claims 2 or 3, characterized in that the braking shaft (14) is coaxial with the turbine shaft (4).

5. Device (10) according to any one of claims 2 to 4, characterized in that the braking shaft (14) and the turbine shaft (4) are combined into a single shaft.

6. Device according to any one of claims 2 to 4, characterized in that the braking shaft (14) and the turbine shaft (4) are coupled through a coupling device (50).

7. Device (10) according to claim 6, characterized in that the said coupling device (50) is a gearbox.

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8. Device (10) according to claim 6 or 7, characterized in that the said coupling device (50) is a clutch.

9. Device (10) according to one of claims 2 to 8, characterized in that the said at least one body (12) is driven in rotation with the braking shaft (14) when the turbine shaft (4) rotates about its axis.

10. Device (10) according to any one of claims 2 to 9, characterized in that the said at least one body (12) is rigidly connected to the said braking shaft (14) through a connecting means (18, 20).

11. Device (10) according to any one of claims 2 to 10, characterized in that the said at least one body (12) is fixed directly onto the braking shaft (14) through a connecting means composed of at least one anchor zone (18) of the body (12).

12. Device (10) according to any one of claims 2 to 10, characterized in that the said at least one body is connected to the said braking shaft (14) through a connecting means composed of at least one rigid arm (20).

13. Device (10) according to claim 11 or 12, characterized in that the said connecting means (18, 20) has a streamlined profile.

14. Device (10) according to any one of claims 2 to 13, characterized in that when it comprises more than one body (12), the said bodies (12) are distributed around the periphery of the braking shaft (14), in a regular manner, or in a non-regular manner.

15. Device (10) according to any one of claims 2 to 14, characterized in that when it comprises more than one body (12), the said bodies (12) have either all the same axial positions along the braking shaft (14), or different axial positions along the braking shaft (14).

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16. Device (10) according to claim 1 to 15, characterized in that when it comprises more than one body (12), the said bodies (12) are chosen to be identical or different

17. Device (10) according to any one of claims 1 to 16, characterized in that when it comprises more than one body (12), the said bodies (12) all have the same dimensions.

18. Device (10) according to claim 6 or 7, characterized in that the bodies may be profiled bodies or non-profiled bodies.

19. Device (10) according to claim 1 to 18, characterized in that it is arranged on the downstream side of the turbine (2) with respect to a flow direction of the fluid medium.

20. Turbine (2), characterized in that it is equipped with a hydraulic braking device (10) according to any one of claims 1 to 19.

21. Turbine (2) according to claim 20, characterized in that the turbine (2) is immersed in a first fluid medium and the braking device (10) is immersed in a second fluid medium.

22. Drilling equipment, characterized in that it comprises at least one turbine (2) equipped with a hydraulic braking device (10), according to claim 20 or 21.

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